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Citazioni:

SWINHOE: P.Z.S. Lond. 520 (1884)

COTES-SWINHOE: Cat. III, 2444 (1888)

WARREN: Seitz III, 367 (1913) (*similota* sic.)

Pandesma anysa distincta ROTSCHECHL: Nov. Zool. 27, 93 (1920).

Citazioni:

DRAUDT: Seitz III suppl., 225 (1936).

(Vide citazioni errate sub *anyssa* Gn.)

Questa specie migratrice che copre parte dell'Asia, del bacino mediterraneo e tutta l'Africa viene designata dal principio del secolo col nome di *anyssa* Guen.

La sinonimia di *fugitiva* è stata accertata dal Dr. NYE; quella di *opposita* Wallgr. è nuova; osservandosi che il tipo di WALLENGREN è una ♀ e non un ♂ come indicato da lui, e questa inversione di sesso spiega probabilmente il nome dato da WALLENGREN, poichè la specie è sessualmente dimorfica.

Sotto il nome subspecifico di *sennaarensis* Feld. dovrebbe essere indicata la popolazione africana, sotto quello di *grandis* Stg. (= *terrigena* Christ.) quella del Turkestan e sotto quello di *distincta* Rots., quella del N. Africa.

Ma l'esame di numeroso materiale proveniente da tutte le località dimostra che la specie non può essere scissa in sottospecie, tutt'alpiù certi individui possono essere separati come forme locali, probabilmente perchè nell'area della migrazione si sono formate delle colonie locali di individui stazionari. Così possono essere utilizzati i nomi di *grandis* Stgr. e *distincta* Rots.

Di questa specie ho esaminato, oltre il tipo di *opposita* Wall., 189 esemplari ♂ e ♀ provenienti dall'India, Turkestan, Transgiordania, Arabia, Algeria, Nilo Bianco, Asben, Darfur, Egitto, Sudan, E. Africa, Abissinia, Kenia, Somalia, Uganda, Tanganika, Costa d'Oro, S. Elena, Angola, S.W. Africa, Capo e Transvaal.

E' una specie notevolmente e disordinatamente variabile oltre che sessualmente dimorfica. Probabilmente non esiste in Madagascar, dove è sostituita dalla seguente.

Thria decaryi (Viette)

Pandesma decaryi VIETTE: Bull. Ent. Fr. 71, 143 (maggio 1966)

Thria malgassica BERIO: Ann. Mus. Genova, 76, 131 (novembre 1966)

È esclusiva del Madagascar. Per la critica e il materiale esaminato rimando alla pubblicazione, aggiungendo:

1 ♂: Nanisana (Tananarive), III-1932, (Olsonfieff).

1 ♀: Diego Suarez, VI-15-17, (Melon) al British Museum.

1 ♀: Behara, foresta di Didiera e Alluandia, 28-X-1934, (Catala).

RIASSUNTO

Si dimostra attraverso l'esame dei tipi e dei reperti che la specie endemica molto comune in Asia e Africa, sinora determinata nelle collezioni come *Pandesma anysa* Guen. e con tale nome ritenuta e figurata dagli Autori, deve portare il nome *Thria robusta* Wlk., dato che la *P. anysa* Guen. (vera) è un'altra specie (molto simile alla *P. quenavadi* Guen.) che si trova confinata in Asia. Si descrive una nuova *Pandesma* asiatica e si danno le sinonimie e le figure degli apparati genitali maschili delle specie trattate.

SUMMARY

After the study of types and other examined materials, it is shown that the endemic species very common in Asia and Africa - hitherto named in the collections *Pandesma anysa* Guen. and so considered and figured by the authors - must bear the name *Thria robusta* Wlk. The true *P. anysa* is indeed a different species, very similar to *P. quenavadi* Guen.; it is found in Asia only. A new *Pandesma* is described, from Asia. Of all the species here considered synonyms are given and male genitalia are figured.

P.J. MILLER

Zoology Dept., University of Bristol, England

A NEW SPECIES OF *POMATOSCHISTUS* (TELEOSTEI: GOBIIDAE) FROM WESTERN SICILY

INTRODUCTION

By virtue of their small size and superficial resemblance to one another, the European gobies of the genus *Pomatoschistus* form a critical systematic group whose members have still to be adequately diagnosed and placed in some tentative phyletic scheme. In the course of revisional work designed to meet this need, the present new species was discovered in a small collection of gobies from brackish water at Marsala, Sicily. The discovery of a new species of inshore teleost in the relatively well-explored western Mediterranean may come as a surprise, but should encourage further investigation into taxonomic problems set by euryhaline fish groups in this area.

***Pomatoschistus tortonesei* sp. nov.**

Plate I; Fig. 1

M a t e r i a l. Holotype, a male $21 + 4.5$ mm, and four paratypes, females $21.5 + 4.75$ to $24 + 5.5$ mm, from brackish water, Marsala, Sicily ($37^{\circ} 48' N$, $12^{\circ} 27' E$). These specimens were found in an uncatalogued collection in the Museo Civico di Storia Naturale, Genoa, and no information about date of capture is available. The holotype MSNG 41682 and two paratypes MSNG 41683 are retained at the above museum, and two paratypes deposited in the British Museum (Natural History), Reg. No. 1968. 5. 18. 1-2.

N a m e . In honour of Prof. E. Tortonese, Director of the Museo Civico di Storia Naturale, Genoa, and leading authority on the Mediterranean fish fauna.

G e n e r a l d e s c r i p t i o n . Body moderately elongate; in standard length, depth at origin of pelvic fin $5.4 - 5.85$ (mean 5.6), at

origin of anal fin 7.05 - 8.1 (7.45), of caudal peduncle before origin of caudal fin 10.75 - 12.65 (11.85). Head long; in standard length, horizontal length (snout to upper origin of opercle) 3.4 - 3.6 (3.5), maximum width (between upper origins of opercles) 7.0 - 7.4 (7.15). Horizontal distance from tip of snout to origin of first dorsal fin 2.55 - 2.65 (2.6), to origin

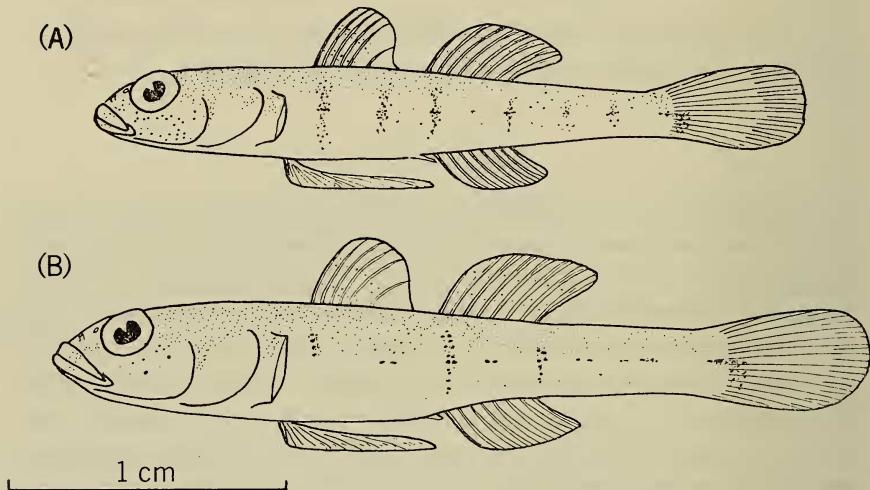


Fig. 1 - *Pomatoschistus tortonesei* sp. nov. (A) Holotype, male, 21 + 4.5 mm, MSNG 41682. (B) Paratype, female, 24 + 5.5 mm, MSNG 41683. Pectoral fin omitted to show lateral markings below first dorsal fin.

of second dorsal fin 1.7 - 1.75 (1.72), to anus 1.85 - 1.95 (1.9), to origin of anal fin 1.65 - 1.7 (1.69), to origin of pelvic fin 2.95 - 3.25 (3.05), all in standard length. Caudal peduncle (end of anal fin base to origin of caudal fin) horizontal length 3.6 - 3.85 (3.7) in standard length, depth 2.95 - 3.55 (3.2) in own length. In head length, snout 4.2 - 4.7 (4.45) in females and 6.0 in male, eye 3.3 - 3.5 (3.4), postorbital length 2.0 - 2.35 (2.15), cheek depth 5.0 - 6.3 (5.8); eye and cheek direct, rest horizontal measurement. Interorbital width 3.4 - 6.0 (4.85) in eye length. Snout shorter than eye, with oblique profile and convex section; anterior nostril a short erect tube, not overlying upper lip; posterior nostril pore-like, with slightly raised edges. Eyes large, dorsolateral, with narrow interorbital space. Postorbital region with horizontal profile, smooth; dorsal axial musculature covering posterior two-thirds of cranial roof but with anterior angle exposed (fig. 3). Mouth moderately oblique,

jaws subequal, with posterior angle below not more than anterior quarter of eye. Upper lip width about half to two-thirds of lateral preorbital area. Branchiostegous membrane attached along entire lateral margin of isthmus, from immediately anterior to pectoral origin. Tongue broad, truncate.

Otoliths. Not examined.

Teeth. Upper and lower jaws with narrow band of villiform teeth, outer row somewhat enlarged.

Fins. First dorsal fin VI; second dorsal fin I/7; anal fin I/7 (terminal bifid ray of second dorsal and anal fin counted as one); caudal fin (branched rays) 13; pectoral fins 17-18; pelvic fins 1/5 + 1/5. In standard length, first dorsal base 10.5 - 11.0 (10.8), second dorsal base 6.2 - 7.6 (6.95), anal base 7.0 - 8.0 (7.45), caudal fin length 4.35 - 4.9 (4.55), pectoral fin length 4.3 - 4.55 (4.45), pelvic fin length (origin to tip of fifth branched ray) 3.65 - 4.0 (3.8). First dorsal fin arises opposite anterior part of pectoral fin; last ray well before vertical of pectoral fin tip. In standard length, first dorsal rays (male) 7.8, 7.0, 7.5, 8.4, 10.0, 16.5; (female) 8.0, 6.65, 6.65, 7.25, 8.0, 13.35; none pungent. First dorsal rays not reaching to origin of second dorsal fin; interdorsal space well developed, about half distance between last ray of first dorsal fin and first ray of second dorsal fin. Second dorsal commences slightly in advance of anal fin origin; last ray above end of anal fin base. In standard length, second dorsal fin rays (male) 8.4 (spinous), 6.2 (first articulated), 7.0 (fourth); (female) 8.3, (spinous), 6.0 (first articulated), 7.05 (fourth), 12.0 (last). Posterior tip of second dorsal fin not reaching to middle of caudal peduncle. Anal fin commences slightly behind origin of second dorsal fin; last ray below that of latter. In standard length, anal fin rays (male) 10.5 (spinous), 8.5 (first articulated), 8.5 (fourth), 10.5 (last); (female) 12.0 (spinous), 8.0 (first articulated), 7.75 (fourth), 12.0 (last). Posterior tip of anal fin not extending back as far as that of second dorsal fin. Caudal fin rounded, less than head length and with convex posterior edge. Pectoral fin reaching back to beyond first dorsal base but not to below second dorsal origin; uppermost pectoral rays not separated from fin membrane. Pelvic fins completely united to form disc, with edge of anterior membrane slightly crenate but without minute villi; posterior margin of disc rounded, without emargination; pelvic disc long, reaching to below genital papilla or origin of anal fin, its length 0.65 - 0.85 (0.75) in distance from pelvic origin to anus. Male holotype without nuptial warts on pectoral or dorsal fins, but relatively

smaller size of latter in relation to those of female suggest that development of secondary sexual characters is not complete in male specimen.

Scales. 31-33 (29-35) in lateral series, 8-10 in transverse series from anterior end of second dorsal fin backwards to anal fin. Scales

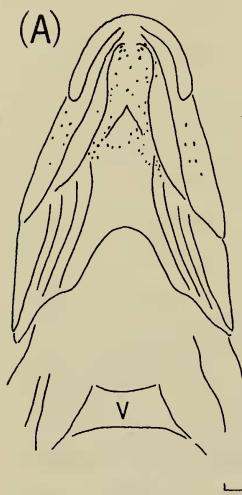


Fig. 2

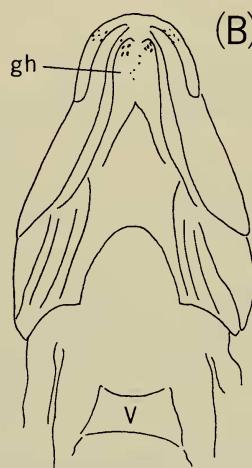


Fig. 2

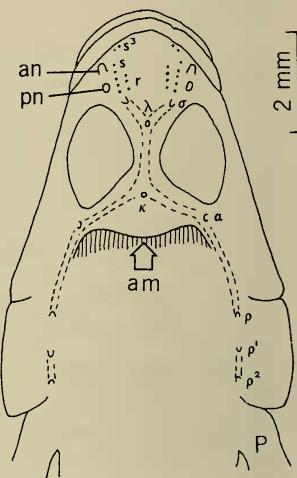


Fig. 3

Fig. 2 - *Pomatoschistus tortonesei* sp. nov. Melanophores on underside of head in (A) Holotype, and (B) Paratype shown in Fig. 1. V, anterior membrane of pelvic disc; gh, geniohyoid muscles.

Fig. 3 - *Pomatoschistus tortonesei* sp. nov. Preorbital lateral-line sensory papillae and dorsal canal-pores of head in paratype, female, 24 + 5.5 mm, BM (NH) 1968.5.18.1. Abbreviations as in Fig. 4, except am, anterior boundary of axial musculature.

not present on head, predorsal area anterior to line from upper origin of pectoral fin to about third ray of first dorsal fin, or on breast.

Vertebræ not examined.

Coloration. Preserved material fawn; head without conspicuous markings but some large melanophores on cheek and oblique preorbital bar across lips; anterior origin of geniohyoid muscles with group of melanophores (fig. 2); primary vertical dark bands across lateral midline below origin and end of second dorsal fin in both sexes; caudal peduncle with two or three small spots along lateral midline and a short horizontal mark at origin of caudal fin continuous with a small vertical mark over bases of lower caudal rays; saddle-like areas at positions of primary bands and on upper corner of caudal peduncle; re-

ticulate marking over body not extending below lateral midline; dorsal fins with traces of oblique thin dark bands; anal, pectoral, and pelvic fins clear. Male with elongate vertical bands below origin and end of first dorsal fin base, and slight vertical proliferation of lateral spots

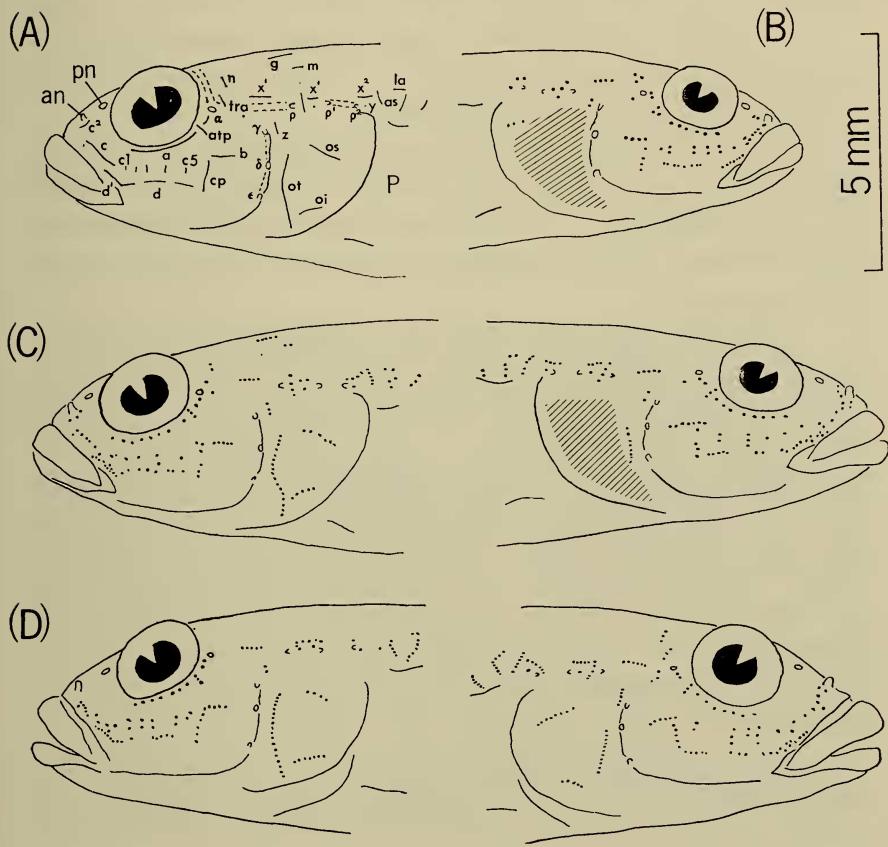


Fig. 4 - *Pomatoschistus tortonesei* sp. nov. Lateral-line sensory papillae and canal-pores of head. (A) Diagram of terminology (see text); (B) Holotype, right side; (C) Paratype shown in Figs. 1 & 2, left and right sides; (D) Paratype shown in Fig. 3, left and right sides; an, anterior nostril, pn, posterior nostril; P, pectoral fin; cross-hatching denotes areas of abrasion.

on caudal peduncle. No spot on first dorsal fin and anal fin not pigmented. Underside of head with melanophores over most of geniohyoid muscles and apex of branchiostegous membrane. Female with vertical mark below origin of first dorsal fin not extending below lateral midline, and

small spot below posterior end of first dorsal fin not elongated into vertical band. Several melanophores at anterior end of geniohyoid muscles.

Lateral-line System (Figs 3 & 4). Terminology used is that of SANZO (1911); numbers of papillae in each row given in parentheses.

(a) Cephalic canals. Anterior and posterior oculoscapular and preopercular canals present, with pores σ , λ , α and ρ (ω and β absent), ρ^1 and ρ^2 , and γ , δ , and ε , respectively.

(b) Sensory papillae. (i) Preorbital. Median series in three rows, postero-median r (2-4 papillae), and outer s (2-5) and s^3 (2-3). Lateral series with ascending row c (6-10), above upper lip and most posterior papilla sometimes doubled to form short transverse row, and c^2 (2-4) about anterior nostril.

(ii) Suborbital. Infraorbital row a consisting of short section (2) from pore α , a transverse row atp (usually 3, or 2), and another section (7-8) around lower edge of orbit to end below or in advance of anterior edge of pupil. Longitudinal row b (5-7) not extending before vertical from posterior border of orbit and separated from pore δ . Below level of row b , usually five (or six) transverse rows (c 1-4, and cp) in series along cheek from above angle of jaw to below anterior end of row b : $c1$ (1-3), $c2$ (1-2), $c3$ (2-3) $c4$ (1-3), $c5$ (2), and cp (4-6); last more or less below vertical of end of row atp . Longitudinal row d with usually doubled anterior oblique d^1 (5-10) above angle of jaw, and posterior horizontal part (8-12) typically divided twice along its length, continuous anteriorly with d^1 but not usually joining cp .

(iii) Preopercular-mandibular. External row e and internal row i both divided into prearticular (e , 11-15; i , 9-17) and postarticular (e , 15-22; i , 16-18) sections by gap in region of lower jaw articulation, with anterior ends of these sections of i extending a few and several papillae in advance of e respectively. Mental row f of two papillae.

(iv) Oculoscapular. Anterior transverse series tra with upper section (1-3) above and behind pore α and lower section (1-2) behind latter. Row z (2-5) behind pore γ . Longitudinal row x^1 divided by posterior transverse row trp (2-5) into anterior (4-6) and posterior (2-5) sections; below latter, a single papilla before pore ρ^1 . Posterior longitudinal row x^2 (2-6) above one papilla representing row y . Axillary rows as (5-6), la (1-3), as^2 (3-5), la^2 (2), and as^3 (3-6).

(v) Opercular. Transverse row *ot* (15-20), superior longitudinal row *os* (4-8), and inferior longitudinal row *oi* (5-7).

(vi) Anterior dorsal (Occipital). Anterior transverse row *n* (2-3) short. Longitudinal rows *g* (4-6) and *m* (2). Row *o* not found. Longitudinal row *h* (8) anterior to origin of first dorsal fin.

(vii) Interorbital. Absent.

(viii) Trunk, and (ix) Caudal. No anterior ventral series *lt*; ventral series with rows *lv* long (19-21), *lv* (8-9) and *lv*² (5-6), from opposite pelvic spinous ray to before vertical of anus, each row usually divided into two parts; median series *ltm* of short vertical rows along lateral midline; dorsal rows *ld* (6-8), opposite origin of first dorsal fin, and *ld*¹ (3) opposite end of first dorsal base.

Biology. The type specimens were found in brackish water at Marsala, at the western corner of Sicily, and this locality is the only one from which the species is definitely known. The same collection of fishes also included the euryhaline *Pomatoschistus marmoratus* (Risso).

The largest individuals of *P. tortonesei* are two females of 24.0 + 5.5 mm, the only male being 21.0 + 4.5 mm. Although the latter does not show any marked nuptial elongation of the dorsal fin-rays or development of nuptial warts on pectoral or dorsal fins, the seminal vesicles in this specimen are conspicuously lobulated and suggest that sexual maturation is at least under way. However, since the ratio of minimum length at sexual maturity to final maximum length in several other *Pomatoschistus* species ranges from 0.45 - 0.56 (MILLER, 1963), the maximum length attained by *P. tortonesei* should be no more than about 56 mm, if 25 mm is taken as minimum length at sexual maturity, and is probably less than this estimate.

AFFINITIES

Features of this new species which clearly validate its inclusion in *Pomatoschistus* Gill, as redefined by DE BUEN (1931) and the present author (unpublished), are the possession of (i) anterior and posterior oculoscapular and preopercular lateral-line canals on the head, with anterior oculoscapular pores σ , λ and κ , and only pores γ , δ and ϵ on preopercular canal; (ii) suborbital sensory papilla row *a*; and (iii) transverse suborbital rows formed from posterior, suborbital, section of row *c*.

Apart from *P. tortonesei*, the author currently places seven other species in *Pomatoschistus* but does not support the subgeneric division of this genus proposed by DE BUEN (1930, 1931). In chronological order of description, these are:

- 1) *Gobius minutus* Pallas 1769 (type-species by original monotypy; junior synonyms include *Gobius elongatus* Canestrini 1861);
- 2) *Atherina marmorata* Risso 1810 (= *Gobius marmoratus* Risso 1827, non PALLAS 1811; *Gobius leopardinus* Nordmann 1840; *Pomatoschistus microps* *leopardinus* (Nordmann) of recent Black Sea authors such as BANARESCU (1964), SVETOVIDOV (1964) and GEORGIEV (1966); *Gobius ferrugineus* Kolombatovic 1891; *Syrrhothonus charrieri* Chabaud 1933);
- 3) *Gobius microps* Kröyer 1838;
- 4) *Gobius quagga* Heckel 1840;
- 5) *Gobius knerii* Steindachner 1861 (= *Gobius steindachnerii* Kolombatovic 1900);
- 6) *Gobius pictus* Malm 1865 (= *Gobius affinis* Kolombatovic 1891);
- 7) *Gobius norvegicus* Collett 1902 (= *Gobius fagei* De Buen 1923).

The generic status of two further species, *Gobius panizzae* Verga 1841 and *Gobius canestrini* Ninni 1882, the latter included in *Pomatoschistus* by DE BUEN (1930, 1931), is under investigation. It is certain that *Gobius ocheticus* Norman 1927, from the Suez Canal (Port Said to Gulf of Suez) belongs neither to *Pomatoschistus*, as DE BUEN (1930, 1931) suggested, nor to the North American genus *Coryphopterus* Gill, as SMITH (1959) concluded; as an Indo-Pacific immigrant into the Mediterranean, this goby is probably referable or related to *Monishia* Smith. Following the recent monograph by GEORGIEV (1966), the author believes that the Black Sea Ponto-Caspian species *Gobius longicaudatus* Kessler 1877 and *Pomatoschistus caucasicus* Berg 1916 deserve separate generic rank from *Pomatoschistus*, GEORGIEV himself grouping them in *Knipowitschia* Iljin.

Within the genus *Pomatoschistus*, the species *P. marmoratus*, *P. pictus*, *P. microps*, and *P. tortonesei* show in common a suborbital row *a* with usually only one short transverse row (*atp*) originating near the posterior end of *a* at pore α (illustrated by GEORGIEV, 1966, fig. 7; FAGE,

1914, fig. 4, nos 3 & 4; and present Fig. 4, for these species respectively). From the rest of this group, *P. marmoratus* is easily identified by the presence of scales on the breast and a villose free edge to the anterior pelvic membrane, and *P. pictus* by its very distinctive coloration (see HOLT & BYRNE, 1903, pl II, fig. 1). Both these species, but not *P. microps* or *P. tortonesei*, also possess a pore ω on the anterior oculoscapular canal. *Pomatoschistus tortonesei* itself differs from *P. microps* by (i) the existence of dorsal scales anterior to the interdorsal space, flanking most of the first dorsal fin-base, (ii) meristic characters of D₂ I/7, A I/7, Sc.l.l. 29-35 (as against D₂ I/8-10, A I/8-10, Sc.l.l. 39-52 in *P. microps*), and (iii) coloration, with no conspicuous posterior spot on first dorsal fin in male, and presence of lateral bars in female as well as male (a feature shared with *P. quagga* and *P. kneri*). In the genus as a whole, *P. tortonesei* has the lowest range in lateral scale-count and in number of second dorsal and anal fin-rays. For this reason, specimens identified as *G. quagga* by STEINDACHNER (1868) from Malaga, Spain, with D₂ I/8-9, A I/8-9, Sc.l.l. 30-33, and lateral bars, may in fact have been *P. tortonesei*, with the terminal bifid ray in the second dorsal and anal fins perhaps counted as two rays. The true *G. quagga*, however, possesses a very similar formula of D₂ I/9 and A I/8-9, if rather more scales (35-40), and also has the lateral bars and dorsal saddle-like markings noted by STEINDACHNER.

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Note that references to original descriptions are omitted; most of those cited are given by DE BUEN (1931).

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